

# Trials on the Trail to Developing an Anchialine Pool Monitoring Protocol

In the remote coastal regions of Hawai'i Volcanoes National Park (HAVO) numerous techniques are being tested to monitor fauna in anchialine pools (brackish water habitats found in coastal lava fields). Requiring strenuous hikes of over eight miles to the coastline at and around an area known as Halapē, field technicians are trying to determine the best method to survey shrimp populations. Not only are there five different shrimp species inhabiting these unique ecosystems, but there are many other animals that either live in or use anchialine pools as well. For instance, certain damselflies and dragonflies lay their eggs on the surface of the pools. Other animals found in the anchialine pools include snails and fishes.

Over the past year many volunteers and technicians have conducted fauna survey trials at Halapē. Last summer (2009) biotechs and volunteers performed trapping surveys over the course of a few months. The results were surprising. Traps that worked well in anchialine pools in West Hawai'i national parks were not working at all in HAVO. Another method had to be attempted in order to develop an effective monitoring protocol.

During the early months of 2010, two field technicians again braved the extreme weather conditions on the rugged coastline. The first survey method they tried was photo identification. The photo identification method involved taking pictures of quadrats that were placed in the pools in select locations. These trials considered the differences between high tide vs. low tide, day vs. night, various types of bait vs. none, and time intervals of 15, 30, and 60 minutes. After a few weeks of high winds, the team ran into complications with the photo identification method.

After reevaluating the situation, the team decided to try visual surveys



Below and above water photos of a large anchialine pool on the Hawai'i Volcanoes National Park coastline

using the same quadrats as in the photo identification method. This required the technicians to actually snorkel in the pools to identify and count the shrimps within a given quadrat. This method yielded the best success rate yet.

Once the surveys were finished at Halapē, the team tested their new visual survey method at Pu'u'honua o Hōnaunau National Historical Park (PUHO). They also tested trapping methods again. Not only were the original traps tested, but new traps were developed and tested as well. Based on the results at PUHO the team decided to go back to Halapē in Hawai'i Volcanoes National Park to test visual and trapping methods once again.

Currently at Halapē, two different types of traps are being tested, along with the visual survey. The goal for this study is to compare the ratio difference of shrimp species and numbers between trapping and the visual surveys.

In short, it has taken many months, people, and effort to develop a sound method to monitor the shrimps in anchialine pools. As we start ruling out methods through trial and error, we are getting one step closer to developing the anchialine pool monitoring protocol.

—M. Jerolaman, Aquatic Volunteer



A native shrimp species 'ōpae 'ōeha'a (*Macrobrachium grandimanus*) attracted to coconut bait



Shading the photographer from the sun was a necessary, but not ideal, technique to photograph a quadrat



One type of trap for small native shrimp which has proven somewhat successful